

Pancreatic Lymphangioma: CT, MRI, and Angiographic Features

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Abstract. An unusual case of pancreatic lymphangioma presenting as a large mid-abdominal mass with sunburst pattern of calcification is herein described. The findings noted on computed tomography (CT), magnetic resonance imaging (MRI), and mesenteric angiography are illustrated.

Key words: Abdomen, calcifications – Pancreas, lymphangioma.

Pancreatic lymphangioma is a rare lesion and only a few cases have been reported in the literature [1–5]. The diagnosis can be suspected by appropriate imaging studies. Suggestive findings are computed tomographic (CT) attenuation values indicating the presence of fat in a cystic retroperitoneal mass or lymphangiography showing communication of the lesion with the lymphatic system. We recently encountered a patient with this entity, whose case forms the basis of this report.

Case Report

A 69-year-old white man presented with a large palpable, non-tender mid-abdominal mass which had been present for several years. He had experienced a 4-kg weight loss during the past year, but was otherwise well. No other pertinent findings were obtained from the history, and the results of a previous laparotomy were not available.

Abdominal plain films showed a large soft tissue mass in the right upper quadrant with a central sunburst calcification pattern. An upper gastrointestinal series showed elongation of the gastric antrum and widening of the duodenal loop. These structures were not invaded by the tumor.

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CT showed a mass, 7 cm in diameter, occupying the head of the pancreas. It had a lobulated contour and a central sunburst calcification pattern was demonstrated. Adjacent structures such as the inferior vena cava appeared to be displaced but not invaded. CT attenuation numbers of the mass were consistent with fluid density (6–30 HU on noncontrast images). After intravenous injection of contrast material, there was inhomogeneous enhancement of the lesion (Fig. 1).

On angiography, the celiac injection showed mass effect on the main hepatic and gastroduodenal arteries. The left branch of the hepatic artery supplied the entire liver. The right hepatic artery was amputated distally and its more proximal branches supplied the mass. In the venous phase large venous structures were identified along the periphery of the mass, draining into the portal vein. The superior mesenteric injection showed many small feeding vessels supplying the mass (Fig. 2). And the venous phase showed large draining veins joining the splenomesenteric venous confluence.

Magnetic resonance imaging (MRI) showed the mass to be inhomogeneous with a low-signal intensity on T1-weighted images (slightly lower than the intensity of the liver and kidneys) (Fig. 3 A). T2-weighted images showed low-signal intensity in the center of the mass corresponding to the areas of calcification. The remainder of the mass itself, however, showed a high-signal intensity, most likely due to stagnant blood in venous lakes and fluid-filled cysts (Fig. 3 B).

At surgery, the mass was found to be unresectable due to envelopment of the hepatic artery and portal vein. Biopsies were obtained at different sites. Pathologic examination revealed fragments of tissue which contained irregularly shaped spaces lined by slightly plump to more flattened spindle cells. The majority of these spaces did not contain red blood cells and were clean, whereas some contained pale eosinophilic fluid. Between the spaces were numerous small capillaries filled with red blood cells. The cells lining the spaces were regular, bland in morphology, and there were no typical or atypical mitotic figures noted. The Factor VIII stain confirmed that these spaces were lined by endothelial cells. None of the sections showed evidence of malignancy. Findings on pathological examination were consistent with benign lymphangioma.

Discussion

The cause of lymphangiomas is unknown. In this condition, early development sequestration of lymphatic vessels is thought to occur. These abnormal

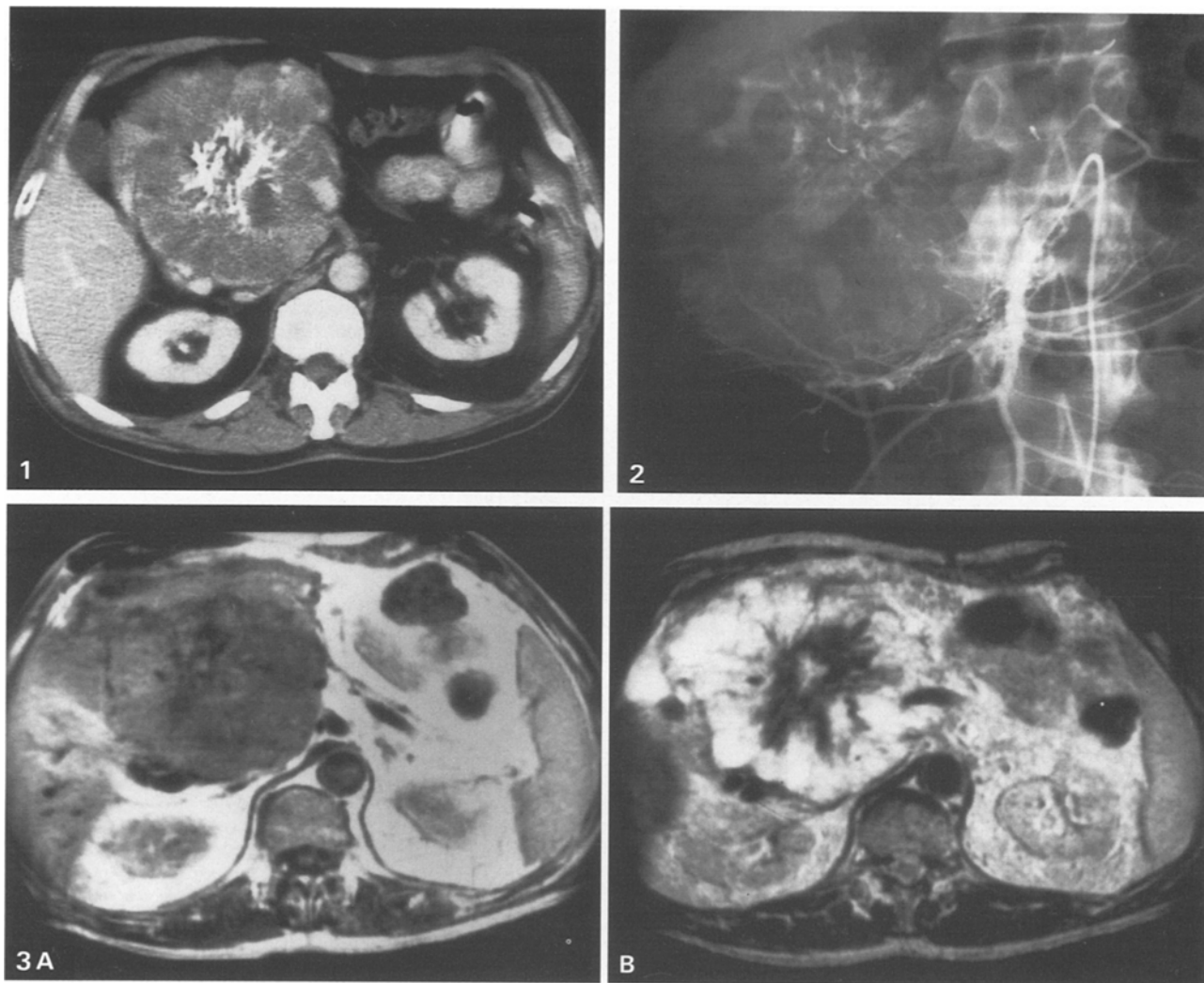


Fig. 1. CT image of the abdomen after intravenous injection of contrast material demonstrates a large retroperitoneal mass with sunburst calcification, inhomogeneous contrast enhancement, and large peripheral venous structures.

Fig. 2. Superior mesenteric arteriogram shows many small feeding branches supplying the mass with central calcification.

Fig. 3. **A** T1-weighted MRI image of the abdomen shows the mass to be of lower signal intensity than the liver and kidneys. **B** T2-weighted MRI image shows low-signal intensity of central calcification and high-signal intensity of the mass most likely related to the venous lakes and fluid-filled cystic structures.

structures fail to establish connection with normal-draining lymphatics. Under the pressure of lymphatic accumulation, the abnormal lymphatic channels dilate to form a cystic mass which may be uni- or multilocular [1, 2].

The CT and MR characteristics of these lesions will be influenced by their vascularity and the pres-

ence of fat and fluid within cystic spaces. The latter may be related to the type of communication with the remainder of the lymphatic system. The presence and the type of calcifications and the stromal architecture of these lesions are also variable as reflected in the diversity of CT appearances in the few reported cases. In a previously reported case of a large retroperitoneal lymphangioma, the pre-operative diagnosis of the mass was possible due to the low CT attenuation number of the mass (-15 HU), corresponding to fat within the lymphatic fluid. This was confirmed by fine-needle aspiration of chylous fluid and the lymphangiographic finding of communication with the lymphatic system [3]. In a recent review of 19 cases of retroperitoneal lymphangioma by Davidson et al., CT was obtained in 14 cases and only one showed chylous content on the basis of negative CT attenuation numbers. This retroperitoneal cystic mass was continuous with a dilated thoracic

duct. In the other 13 cases, CT showed attenuation values consistent with fluid density (3/35 HU) [4]. Although none of these cases were located in the pancreas, CT attenuation numbers in most of these cases was similar to ours and consistent with fluid. Davidson et al. emphasize that, based on CT analysis, most retroperitoneal lymphangiomas are not contiguous with the mesenteric lymphatic system. In contrast, lymphangiomas of the mediastinum often contain chylous fluid.

The pattern of sunburst calcification seen in our case and that of Laurence et al. [5] is of interest since it has previously been considered most suggestive of serous cystadenomas. Calcifications in retroperitoneal lymphangioma are rare. When they occur, however, they are most often ring shape or due to phleboliths [4]. This is the first description of the MRI and angiographic features of this lesion. The ability of angiography and MRI to dif-

ferentiate these cystic lesions from other, more common lesions is uncertain.

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Received: August 8, 1990; accepted: September 11, 1990